

Mail Stop 3720

February 2, 2007

Robert E. Horton, Esq.  
Vice President and General Counsel  
BigBand Networks, Inc.  
475 Broadway Street  
Redwood City, CA 94063

**Re: BigBand Networks, Inc.  
Amendment No. 1 to Form S-1  
Filed January 26, 2007  
File No. 333-139652**

Dear Mr. Horton:

We have reviewed your filing and have the following comments. As noted in our comment letter dated January 19, 2007, we have limited our review to your financial statements and related disclosures and do not intend to expand our review to other portions of your documents. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Note 2 – Significant Accounting Policies, page F-9

Revenue Recognition, page F-10

1. We note your response to prior comment 2. Please address the following items in order for us to more fully understand your accounting policy for trade-in credits:
  - Confirm whether you only provide trade-in credits for products previously purchased from your competitors, rather than products previously purchased

from you. If you also provide trade-ins on your own equipment, tell us whether your accounting policy differs from your policy for competitor trade-ins.

- We note your statement at page F-10, which indicates that you estimate allowances for trade-in credits and adjust these estimates periodically based on actual experience. Clarify for us and expand your disclosure regarding the timing of these estimates. Do you record these allowances in advance of the trade-in transaction? If so, what is your basis for recording these allowances prior to the recognition of revenue? If you record the trade-in at the time of the sale transaction, clarify why the actual trade-in amount is not known and you are required to make estimates?
- Please provide us with example journal entries to illustrate your accounting treatment for these transactions.

Note 10 – Stockholders' Equity (Deficit), page F-32

Stock Options, page F-33

2. We note your response to prior comment 6. Once you have established your estimated IPO price, please provide us with a discussion of each significant factor contributing to the difference between the fair value as of the date of each grant and the estimated IPO price.

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As appropriate, please amend your registration statement in response to these comments. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Act of 1933 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in

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possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

You may contact Melissa Hauber, Senior Staff Accountant, at (202) 551-3368 or Carlos Pacho, Senior Assistant Chief Accountant, at (202) 551-3835 if you have questions regarding comments on the financial statements and related matters. Please contact me at (202) 551-3810 with any other questions.

Sincerely,

Larry Spigel  
Assistant Director

cc: Craig N. Lang, Esq.  
Wilson Sonsini Goodrich & Rosati  
Via Facsimile: (650) 493-6811